

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME;

**Crop Research Division,
Department of Scientific and Industrial Research**

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (U.S.C. 542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

ALFALFA

'Rere'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 19th day of November in the year of our Lord one thousand nine hundred and eighty-one.

Attest:

Demand L. Lee
Commissioner
Plant Variety Protection Office
Grain Division
Agricultural Marketing Service

John R. Block
Secretary of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

FORM APPROVED
OMB NO. 40-R3822

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: See Reverse.

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY SCA 1		1b. VARIETY NAME RERE		FOR OFFICIAL USE ONLY PV NUMBER 8100035	
2. KIND NAME ALFALFA		3. GENUS AND SPECIES NAME Medicago sativa		FILING DATE 12/22/80	TIME 2:30 A.M. P.M.
4. FAMILY NAME (BOTANICAL) Leguminosae		5. DATE OF DETERMINATION 20 June 1978		FEE RECEIVED \$ 500.00	DATE 12/22/80
6. NAME OF APPLICANT(S) Crop Research Division, Department of Scientific and Industrial Research		7. ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) Private Bag, Christchurch, New Zealand		8. TELEPHONE AREA CODE AND NUMBER 03-252-511	
9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: (Corporation, partnership, association, etc.)			10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION		11. DATE OF INCORPORATION
12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:					

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- ☒ 13A. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)
- ☒ 13B. Exhibit B, Novelty Statement.
- ☒ 13C. Exhibit C, Objective Description of the Variety (Request form from Plant Variety Protection Office.)
- ☒ 13D. Exhibit D, Additional Description of the Variety.

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a). (If "Yes," answer 14B and 14C below.) ☐ YES ☒ NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? ☐ YES ☐ NO

14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED? ☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? ☒ YES ☐ NO (If "Yes," give name of countries and dates.)

New Zealand 17 April 1979

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? ☒ YES ☐ NO (If "Yes," give name of countries and dates.)

New Zealand 20 December 1979

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? ☒ YES ☐ NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

4th December 1980
(DATE)

J. P. Palmer
Acting Director
(SIGNATURE OF APPLICANT)

INSTRUCTIONS

GENERAL: Send an original copy of the application and exhibits, at least 2,500 viable seeds, and \$500 fee (\$250 filing fee and \$250 examination fee) to U.S. Dept. of Agriculture, Agricultural Marketing Service, Livestock, Poultry, Grain and Seed Division, Plant Variety Protection Office, National Agricultural Library Building, Beltsville, Maryland 20705. (See section 180.175 of the Regulations and Rules of Practice.) Retain one copy for your files. All items on the face of the form are self-explanatory unless noted below.

ITEM

- 5 Give the date the applicant determined that he had a new variety based on (1) the definition in section 41(a) of the Act and (2) the date a decision was made to increase the seed.

13a Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified and (4) evidence of uniformity and stability.

13b Give a summary statement of the variety's novelty. Clearly state how this novel variety may be distinguished from all other varieties in the same crop. If the new variety most closely resembles one or a group of related varieties: (1) identify these varieties and state all differences objectively; (2) attach statistical data for characters expressed numerically and demonstrate that these differences are significant; and (3) submit, if helpful, seed and plant specimens or photographs of seed and plant comparisons clearly indicating novelty.

13c Fill in the Exhibit C, Objective Description form, for all characteristics for which you have adequate data.

13d Describe any additional characteristics that are not described, or whose description cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the description of characteristics that are difficult to describe, such as, plant habit, plant color, disease resistance, etc.

14a If "YES" is specified (seed of this variety be sold by variety name only as a class of certified seed) the applicant may NOT reverse his affirmative decision after the variety has either been sold and so labeled, his decision published, or the certificate has been issued. However, if the applicant specified "NO," he may change his choice. (See section 180.16 of the Regulations and Rules of Practice.)

15a See section 42 of the Plant Variety Protection Act and section 180.7 of the Regulations and Rules of Practice.

Alfalfa

"Rere"

13A Exhibit A

Rere is an 11 clone synthetic derived from plants selected from Saranac and CUF101 for resistance to blue alfalfa aphid (BAA). 5 clones trace to Saranac and 6 to CUF101. The parent clones were identified by phenotypic mass selection and the syn 0 generation produced by compositing equivalent quantities of hand pollinated seed of all parents. Syn 1 seed was produced using leafcutter bees in isolation under a cage at Woodland, California.

Rere has appeared stable through all generations of seed increase. Comparisons for BAA resistance, bacterial wilt resistance, flower colour, spring and fall growth of Syn 1 and Syn 2 generations showed no evidence of instability. See tables 13D (8) and 13D (9) for evidence of stability of BAA resistance.

13B Exhibit B. Novelty Statement

Rere is a moderately non-dormant alfalfa cultivar which can be distinguished from all alfalfa cultivars except WL514 and CUF101 because of its resistance to blue alfalfa aphid.

Rere can be distinguished from both WL514 and CUF101 by:

- a) flower colour. Rere has 50% purple-variegated flowers while CUF101 and WL514 have 100% purple flowers.
- b) increased dormancy. Rere is significantly more dormant than both WL514 and CUF101.
- c) Rere can be distinguished from WL514 by the greater vigour of its plants following BAA infestation in resistance testing.

AMENDMENT TO EXHIBIT A

(per letter of M. W. Dunbier dated 27 may 1981)

3. Uniformity.

"Rere" meets currently acceptable standards of uniformity for alfalfa varieties. There is evidence for this in its ready commercial acceptance in New Zealand and also from trial data. As an example I submit the following results (Table 1) on spring growth at Lincoln, N.Z. from 100 spaced plants of each cultivar.

Table 1. Mean plant height of spaced plants in September following mid-June cut.

Cultivar	Mean height cm	Coefficient of variation %
Rere	23.5	25.5
WL311	18.2	31.9
WL318	17.1	30.4
WL514	31.6	18.4
Pioneer 581	21.6	31.5
AS13R	25.2	17.9
Apollo	12.4	36.9

Clearly "Rere" is within the range of uniformity present in current commercial US cultivars for this character.

4. Variants.

The only variant we have observed in "Rere" outside the limits of Exhibit C relates to occasional cream flowered plants. This variant is fully described in Exhibit D, particularly note Table 13D(3).

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(3/75)U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C

OBJECTIVE DESCRIPTION OF VARIETY

Alfalfa (*Medicago sativa* L. complex)

NAME OF APPLICANT(S) CROP RESEARCH DIVISION, DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) Private Bag CHRISTCHURCH, NEW ZEALAND	VARIETY NAME OR TEMPORARY DESIGNATION RERE FOR OFFICIAL USE ONLY PVPO NUMBER 8100005
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Place the appropriate number that describes the varietal character of this variety in the boxes below.

Place a zero in first box (e.g. or) when number is either 99 or less or 9 or less.

NOTE: For single plant data a minimum of 100 plants is suggested

1. PRIMARY AREA OF ADAPTATION <input type="text" value="5"/> 1 = NORTHWEST 2 = NORTHCENTRAL 3 = NORTHEAST 4 = SOUTHEAST 5 = SOUTHWEST 6 = SOUTHERN PLAINS 7 = INTERMOUNTAIN	INDICATE AREA WHERE TEST WAS CONDUCTED. FURTHER EXPLANATION CAN GO IN COMMENTS AT THE END OF THE FORM. <input type="text" value="1"/> AREA TESTED Anticipated
2. WINTER HARDINESS <input type="text" value="3"/> 1 = NON-HARDY (Mesa Sirsa) 3 = INTERMEDIATE NON-HARDY 5 = MODERATELY HARDY (Saranac) 7 = HARDY (Vernal) 9 = EXTREMELY HARDY (Norseman) <input type="text" value="1"/> SOURCE OF INFORMATION: 1 = ANTICIPATED 2 = MEASURED	<input type="text" value="1"/> AREA TESTED
3. FALL GROWTH HABIT <input type="text" value="3"/> 1 = ERECT (Mesa Sirsa) 3 = SEMIERECT (DuPuits) 5 = INTERMEDIATE (Saranac) 7 = SEMIDECUMBENT (Vernal) 9 = DECUMBENT (Norsement)	<input type="text" value="1"/> AREA TESTED
4. RECOVERY AFTER FIRST SPRING CUTTING <input type="text" value="2"/> 1 = VERY FAST (Mesa Sirsa) 3 = FAST (Saranac) 5 = INTERMEDIATE 7 = SLOW (Vernal) 9 = VERY SLOW (Norseman)	<input type="text" value="1"/> AREA TESTED
5. FLOWERING DATE (FIRST SPRING GROWTH) <input type="text" value="0"/> <input type="text" value="0"/> DAYS EARLIER THAN <input type="text" value="0"/> <input type="text" value="0"/> 1 = MESA SIRSA 2 = LAHONTAN <input type="text" value="0"/> <input type="text" value="0"/> DAYS LATER THAN <input type="text" value="0"/> <input type="text" value="0"/> 3 = SARANAC 4 = VERNAL 5 = NORSEMAN	<input type="text" value="1"/> AREA TESTED
6. CROWN TYPE <input type="text" value="8"/> 1 = SPREADING ROOTS 3 = SPREADING RHIZOMES (Teton) 5 = BROAD (Vernal) 7 = INTERMEDIATE (Saranac) 9 = NARROW (Mesa Sirsa)	<input type="text" value="1"/> AREA TESTED
7. PLANT COLOR <input type="text" value="5"/> 3 = DARK GREEN (Weevichek) 5 = GREEN (Vernal) 7 = LIGHT GREEN (Ranger)	<input type="text" value="1"/> AREA TESTED
8. HAIRINESS <input type="text" value="1"/> <input type="text" value="0"/> <input type="text" value="0"/> 0% PLANTS WITH DENSELY PUBESCENT STEMS PER LETTER OF M.W. DUNGBIER, 27 MAY 1981 DCB % PLANTS WITH PUBESCENT STEMS	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> % PLANTS WITH PUBESCENT PODS
9. POD SHAPE <input type="text" value="1"/> <input type="text" value="0"/> <input type="text" value="0"/> % PLANTS WITH TIGHT COILS <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> % PLANTS WITH LOOSE COILS <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> % PLANTS WITH SICKLE	

10. GIVE ITEM LENGTH FREQUENCY DISTRIBUTION FOR SUBMITTED AND 1-TO-5 STANDARD VARIETIES 1/

VARIETY NAME	STEM LENGTH FREQUENCY DISTRIBUTION 2/											AVERAGE STEM LENGTH
	0-5 mm. %	6-10 mm. %	11-15 mm. %	16-20 mm. %	21-30 mm. %	31-40 mm. %	41-50 mm. %	51-60 mm. %	61-70 mm. %	71-80 mm. %	81+ mm. %	

11. FLOWER COLOR 3/ (DETERMINE COLOR ON FRESHLY OPENED FLOWERS)

0 5 0 % PURPLE

0 5 0 % VARIEGATED

0 0 0 % YELLOW

0 0 0 % CREAM

0 0 0 % WHITE

12. DISEASE, INSECT, AND NEMATODE RESISTANCE: (Enter resistance of submitted and check cultivars. Circle check cultivars used.)

DISEASE	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
BACTERIAL WILT	(SUBMITTED) RERE	22.0	2.47	0.24	Crop Research Division, DSIR Private Bag, Christchurch, N.Z. 1978 Lincoln
	(RES. CK.) VERNAL	47.0	1.25		
	(SUS. CK.) Wairau (SUS. CK.) NARRAGANSETT	4.0	.04		
ANTHRACNOSE	(SUBMITTED)				
	(RES. CK.) ARC				
	(SUS. CK.) SARANAC				
COMMON LEAF SPOT	(SUBMITTED)				
	(RES. CK.) RAMSEY				
	(SUS. CK.) RANGER				
DOWNY MILDEW	(SUBMITTED)				
	(RES. CK.) SARANAC				
	(SUS. CK.) KANZA				
PHYTOPHTHORA ROOT-ROT	(SUBMITTED)				
	(RES. CK.) AGATE				
	(SUS. CK.) SARANAC				
OTHER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				

1/ Preferred standards: Saranac, Vernal, Norseman, Lahontan, Mesa Sirsa. Twelve hours light at 25° C with 20,000 lux of cool white florescent; 2,000 lux of incandescent filament light and twelve hours darkness at 5° C.

2/ From cotyledonary node to tip of stem 20 days after planting.

3/ For further clarification consult USDA Agricultural Handbook No. 424.

4/ Give: The institution in charge of test, (2) year, and (3) location of test. Describe test procedure if it differs from procedure suggested in ARS-NC-19.

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12. DISEASE, INSECT, AND NEMATODE RESISTANCE: (Enter resistance of submitted and check cultivars. Circle check cultivars used.)

DISEASE	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
OTHER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				
OTHER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				
INSECT	CULTIVAR	% SEEDLING SURVIVAL	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
PEA APHID	(SUBMITTED)	83			DSIR, Crop Research Division 1978 Lincoln, N.Z.
	CUF 101 (RES. CK.)	88			
	Wairau (SUS. CK.)	23			
SPOTTED ALFALFA APHID	(SUBMITTED)	77			Queensland Dept. Primary Industries 1978 Brisbane, Australia AS IN TABLE 6 OF EXHIBIT D
	CUF 101 (RES. CK.)	95			
	Wairau (SUS. CK.)	3			
INSECT	CULTIVAR	% DEFOLIATION	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
ALFALFA WEEVIL	(SUBMITTED)				
	(RES. CK.) ARK				
	(SUS. CK.) VERNAL				
INSECT	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
ALFALFA SEED CHALCID	(SUBMITTED)				
	(RES. CK.) LAHONTAN				
	(SUS. CK.) SONORA				
INSECT	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
POTATO LEAF-HOPPER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				
Blue alfalfa aphid	(SUBMITTED)	80			DSIR, Crop Research Division 1978 Lincoln, New Zealand
OTHER	(RES. CK.) CUF 101	71			
	(SUS. CK.) Wairau	41			

4/ Give: The institution in charge of test, (2) year, and (3) location of test. Describe test procedure if it differs from procedure suggested in

ARG-NC-19, September 1974.

12. DISEASE, INSECT, AND NEMATODE RESISTANCE: (Enter resistance of submitted and check cultivars. Circle check cultivars used.)

INSECT	CULTIVAR	% RESISTANT PLANTS	AVG. SEVERITY INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
OTHER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				
NEMATODE	CULTIVAR	% RESISTANT PLANTS	INDEX (ASI)	ASI LSD .05	TEST, YEAR & LOCATION 4/
STEM NEMATODE	(SUBMITTED)				
	(RES. CK.) LAHONTAN				
	(SUS. CK.) RANGER				
NORTHERN ROOT KNOT NEMATODE	(SUBMITTED)				
	(RES. CK.) NEV. SYN. XX				
	(SUS. CK.) LAHONTAN				
SOUTHERN ROOT KNOT NEMATODE	(SUBMITTED)				
	(RES. CK.) MOAPA 69				
	(SUS. CK.) LAHONTAN				
OTHER	(SUBMITTED)				
	(RES. CK.)				
	(SUS. CK.)				

13. INDICATE A VARIETY THAT MOST CLOSELY RESEMBLES THE VARIETY SUBMITTED FOR THE FOLLOWING CHARACTERS:

CHARACTER	VARIETY	CHARACTER	VARIETY
AREA OF ADAPTATION	Not measured	PLANT HEIGHT	AS13R
RECOVERY AFTER CUTTING	AS13R	WINTER HARDINESS	Not measured

REFERENCES

- Barnes, D.K., and C.H. Hanson, An Illustrated Summary of Genetic Traits in Tetraploid and Diploid Alfalfa, ARS Technical Bul. 1370.
 Barnes, D.K., et al, Standard Tests to Characterize Pest Resistance in Alfalfa Varieties. ARS-NC-19, September 1974.
 Nittler, L.W., G.W. McKee, and J.L. Newcomer, Principles and Methods of Testing Alfalfa Seed for Varietal Purity. New York Agricultural Experiment Station Bul. 807.
 USDA Agricultural Handbook No. 424.

COMMENTS

- 1) All growing tests (3,4,5,6,7,8,9,11) carried out at Lincoln, N.Z. Lat. 43°38'S, Long: 172°48' E. Rainfall 635 mm per annum, mean evaporation 955 mm per annum Temp: Mean max. 16.1°C, mean min. 6.8°C, Mean 11.6°C, ave 93 days with ground frost, 2041 hours of sunshine.
- 2) Area of adaptation in U.S.A. and winter hardiness cannot be assessed yet.
- 3) Susceptible check in all disease and insect testing was N.Z. standard cultivar (= N.Z. common) Wairau.
- 4) Resistant check in all aphid testing was CUF 101.

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13D Exhibit D. Additional Description of "Rere"

"Rere" is a moderately non-dormant alfalfa cultivar. It recovers quickly after cutting and shows a level of dormancy intermediate between AS13R and WL318. See Tables 13D (1) and 13D (2).

"Rere" was selected in a temperate environment at latitude 43°S but is most likely to be adapted to southwestern and intermountain areas of the USA.

In 1979 at Lincoln, N.Z. "Rere" reached flowering (50% plants with at least 3 open florets) 2 days earlier than Pioneer 521, 5 days earlier than WL311 and WL318 and 6 days earlier than WL514 and AS13R.

"Rere" has purple or purple-variegated flowers with cream flowering plants at a very low frequency. "Rere" has a higher proportion of purple-variegated flowers than other cultivars of similar dormancy rating. See Table 13D (3).

"Rere" has good green colour in leaves. It is a darker green than the cultivars AS13R, CUF101 and WL514.

"Rere" has a moderate level of resistance to bacterial wilt. See Table 13D (4).

A natural field epiphytotic of Pseudopeziza medicaginis showed "Rere" to have a low level of resistance, but significantly more than AS13R, CUF101 or WL514 in one trial. See Table 13D (5).

The major distinguishing feature of "Rere" is its resistance is given in Table 13D (6) showing a summary of resistance tests for spotted alfalfa aphid (SAA), pea aphid (PA) and blue alfalfa aphid (BAA) and the statistical tests carried out. The resistance of Rere to BAA compared to a range of cultivars is shown in Table 13D (7) and Plate 13D (1).

The results of BAA tests to distinguish "Rere" from other cultivars claimed to be resistant to BAA (CUF101 and WL514) and demonstrate stability of this character in "Rere" core shown in Tables 13D (8) and 13D (9).

Seedlings of WL514 are noticeably more stunted by BAA infestation than "Rere" and CUF101, while having a similar mean height to Rere tends to have more stunted plants (<40 mm) which is compensated for by some very tall seedlings. There is no significant difference between Rere Syn 1 and Rere Syn 2 generations.

Table 13D (1)

Mean Alfalfa Height cm, Lincoln, New Zealand, 1980

Entry	Autumn regrowth ¹	Winter-spring regrowth ²	Spring growth recovery ³
Rere	43.1	29.6	49.3
AS13R	43.8	36.8	48.6
WL318	29.6	25.9	45.0
WL311	27.6	24.6	46.5
Washoe	27.1	23.9	44.6
Saranac	27.1	22.6	46.2
Pioneer 521	25.6	25.6	44.9

¹ Measured 30 May following 1 April cut² Measured 15 September following 15 June cut³ Measured 15 November following 15 October cut.

Table 13D (3)

Flower Colours of Alfalfa Cultivars, Percentage

Entry	Dark purple	Light purple	Purple-variegated	Green-variegated	Cream	Yellow	White
Rere	24.5	24.5	50.5	-	0.5	-	-
AS13R	47.0	49.4	3.5	-	-	-	-
CUP101	70.9	29.1	-	-	-	-	-
WL514	33.7	66.3	-	-	-	-	-
WL318	28.9	28.9	42.3	-	-	-	-
WL311	40.2	35.9	23.9	-	-	-	-
Saranac	37.5	36.5	23.1	-	-	-	-

Table 13D (4)

Bacterial Wilt Field Evaluation - 1979, Lincoln, New Zealand.

Entry	Average Severity Index	Mean % Resistant Plants
Rere	2.47	22
Wairau	4.04	4
Vernal	1.25	47
AS13R	1.85	33
Pioneer 521	1.99	31
Pioneer 581	1.49	40
WL311	1.51	40
lsd .05	0.49	

Table 13D (2)

Autumn growth score on plot trials, Lincoln, N.Z. 1977/78 season.
 Scored 0 = least growth, 5 = most growth. Trials cut 3 April, scored
 14 May 1978.

Entry	Mean Score, Trial 771	Mean Score, Trial 772
Rere	3.8 bc	2.5 b
Saranac	1.0 e	1.0 d
Washoe	1.5 de	1.3 cd
WL318	1.5 de	1.3 cd
WL514	5.0 a	4.8 a
CUF101	5.0 a	5.0 a

Means followed by the same letter are not significantly different at the 5% level according to Waller-Duncan's test.

Table 13D (5)

Field resistance to P. medicaginis 0 = least, 5 = most resistance.
 Scored May 1978 Lincoln, N.Z. Two plot trials.

Entry	Trial 771	Trial 772
Rere	2.5 b	2.5 a
Saranac	4.3 c	3.3 b
Washoe	1.8 a	2.0 a
WL318	4.8 c	4.3 b
WL514	1.3 a	1.8 a
CUF101	1.0 a	1.5 a
AS13R	1.3 a	-

Means followed by the same letter are not significantly different at the 5% level according to Waller-Duncan's test.

Table 13D (8)

Resistance to blue alfalfa aphid in greenhouse tests, Lincoln, N.Z.
 October 1978.

Entry	Mean % survival 17 days after infestation with BAA	Mean height (mm) of survivors
Rere (Syn 1 gen.)	98 a	48.1 a
Rere (Syn 2 gen.)	95 ab	45.4 ab
CUF101	91 ab	43.7 ab
WL514	93 ab	28.1 c
Saranac	78 c	12.2 d
Wairau	83 bc	11.7 d

Means followed by same letter are not significantly different at 5% level according to Waller-Duncan's test.

Table 13D (6). APHID RESISTANCE OF RERE LUCERNE

(Statistical analyses carried out on transformed data)

	Back-transformed survival %	Transformed mean	1sd .05
a) Pea aphid (<u>Acyrtosiphon pisum</u>)			
Rere	83	1.17 ¹	0.35 ¹
CUF101 (Res.)	88	1.26	
Wairau (Sus.)	23	0.48	
b) Spotted alfalfa aphid (<u>Therioaphis maculata</u>)			
Rere	77	1.02 ¹	0.28 ¹
CUF101 (Res.)	95	1.34	
Wairau (Sus.)	3	0.16	
c) Blue-green aphid (<u>Acyrtosiphon kondoi</u>)			
Rere	80	0.89 ²	0.21 ²
CUF101 (Res.)	71	0.84	
Wairau (Sus.)	41	0.64	

¹ arcs in transformation² square-root transformation

Table 13D (7)

Glasshouse blue alfalfa aphid screening trial 1979

Mean survival % 8/5/79		Mean survival % 15/5/79		Mean survival % 22/5/79	
Rere	80.2	Rere	70.1	Rere	63.3
WL311	67.8	WL311	31.9	WL311	26.2
WL318	56.8	WL318	24.9	WL318	21.8
Saranac	51.2	Saranac	17.3	Saranac	11.6
Washoe	46.1	Washoe	15.8	Washoe	11.5
Iroquois	40.4	Iroquois	14.0	Pioneer 521	7.7
520	37.4	Pioneer 521	12.7	Iroquois	7.1
Pioneer 521	36.4	Chanticleer	10.9	520	6.0
Chanticleer	30.1	520	7.2	Chanticleer	5.4
Wairau	26.5	Hunter River	6.4	AS13R	3.7
Hunter River	26.3	Wairau	6.1	Hunter River	2.2
AS13	22.3	AS13	4.6	AS13	2.0
Glutinosa	20.2	AS13R	3.7	Wairau	1.2
AS13R	16.7	Glutinosa	1.4	Glutinosa	0

Table 13D (9)

Frequency of heights (mm) of survivors of BAA infestation after 17 days. October 1978, Lincoln, N.Z.

Height (mm)	Entry					Wairau
	Rere Syn 1	Rere Syn 2	CUF101	WL514	Saranac	
0-10	5.6	6.5	2.9	11.2	39.1	47.4
11-20	5.1	8.4	14.3	33.1	51.1	46.0
21-30	8.5	11.6	20.6	26.6	9.0	6.6
31-40	14.7	12.3	12.0	11.8	0.8	-
41-50	22.0	19.4	11.4	3.6	-	-
51-60	16.9	14.8	11.4	3.6	-	-
61-70	14.1	17.4	12.0	4.1	-	-
71-80	7.9	7.1	10.3	3.6	-	-
> 80	5.1	2.6	5.1	2.4	-	-